UXO Clearance and Remediation Technologies

Robotic systems for detection and removal of UXO

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BACKGROUND

The Air Force Research Laboratory (AFRL) has developed robotic technologies for the purpose of Unexploded Ordnance Clearance & Remediation. The Active Range Clearance (ARC) program focuses on the application of unmanned systems to support and augment Armed Forces EOD personnel in the removal and disposal of unexploded ordnance and debris from training ranges, air fields, and threat areas. Technologies developed for the ARC program have also have direct application for remediation activities at formerly used defense sites and other hazardous locations.

APPLICATIONS

- Active Range Clearance – Live, Training, and Testing Ranges
- Remediation of UXO contaminated FUDS and BRAC sites
- Demining operations – Mine field breeching and humanitarian demining
- Operations in hazardous locations and NBC contaminated areas

CAPABILITIES

- Remote tele-operated and semi-autonomous operation of large scale excavation equipment at safe distances of up to 3 miles
- Tele-operated Caterpillar 325 L Excavator for impact site clearance and large ordnance retrieval
- Tele-operated Caterpillar D8 Bulldozer for high volume earthmoving, site reclamation, and mine field breeching
- All-Purpose Remote Transport System (ARTS) – C4 Charge Setter for Precision Ordnance neutralization
- All-Purpose Remote Transport System (ARTS) – Flail for Mine-Field Breeching and Humanitarian Demining
- Advanced Mobility Research and Development System (AMRADS) autonomous sensor platform for precision site surveys including: UXO detection, NBC detection, and site monitoring.

Teleoperated 325L Excavator

RECENT OPERATIONS:

- 19 March to 24 June 2001, Camp Croft, SC Cat 325L, D8, and ARTS utilized for clearance of a five-acre impact zone site located in a heavily wooded area of a formally used artillery range. Sponsored by the Army Corp of Engineers, Huntsville Support Center, (CEHNC)

- 10 September to 14 September 2001, Great Falls, MT, AMRADS and a University of Florida autonomous vehicle (MULE) used with Geonics EM-61 Inductance Coils to map a 30-acre site next to the Missouri River. Target was an iron boat frame left by the Lewis & Clark expedition in 1803.

AMRADS with autonomous sensor platform

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